

Quant Mega Quiz for SSC Tier - 1 (Solutions)

S1. Ans.(d)

Sol.

$$0.7 + \sqrt{0.16}$$

$$\rightarrow 0.7 + 0.4 = 1.1$$

$$1.02 - \frac{0.6}{24}$$

$$\rightarrow 1.02 + 0.025 = 0.995$$

$$1.2 \times 0.83 = 0.996$$

$$\rightarrow \sqrt{1.44} = 1.2$$

Hence, the greatest number = $\sqrt{1.44}$

S2. Ans.(d)

Sol.

Let the required number of persons be x .

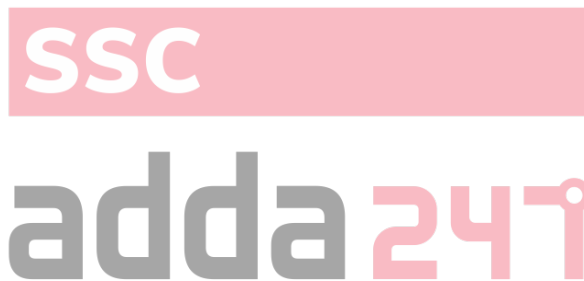
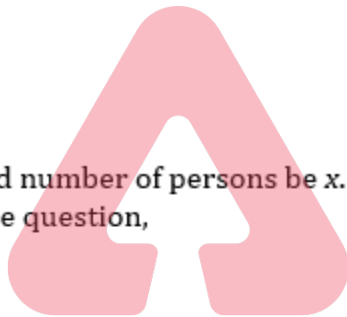
According to the question,

$$2x^2 = 3042$$

$$\rightarrow x^2 = 1521$$

$$\rightarrow x = \sqrt{1521}$$

$$\rightarrow x = 39$$



S3. Ans.(c)

Sol. A product gets 0 at its end when,

- (i) A multiple of 5 is multiplied by an even number or
- (ii) A multiple of 10 is multiplied by any number.


All the given numbers are even and do not contain any multiple of 5. So, zeros at the end of the product will come only on multiplications by multiples of 10.

Multiples of 10 that lie in the given range from 2 to 100 are 10, 20, 30, 40, 50, 60, 70, 80, 90 and 100.

Each of these multiples will yield one zero except 100 which will yield two zeros at the end of the product.

Total no. of zeros at the product
 $= 9 + 2 = 11$

12 + 12 Months Validity



Useful for CGL, CHSL & others

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S4. Ans.(b)

Sol.

Let the original number of friends be x .

$$\rightarrow \text{ATQ, } \frac{108}{x-3} - \frac{108}{x} = 3$$

$$\rightarrow 108 \left(\frac{x-x+3}{x(x-3)} \right) = 3$$

$$\rightarrow X(x-3) = 108$$

$$\rightarrow x^2 - 3x - 108 = 0$$

$$\rightarrow x^2 - 12x + 9x - 108 = 0$$

$$\rightarrow (x-12) + 9(x-12) = 0$$

$$\rightarrow (x-12)(x+9) = 0$$

$$\rightarrow x = 12 \text{ as } x \neq -9$$

The number of friends who attended the picnic
 $= 12 - 3 = 9$

S5. Ans.(b)

Sol.

Let the number be x .

According to the question,

$$3 \times x^2 - 4 \times x = x + 50$$

$$\rightarrow 3x^2 - 5x - 50 = 0$$

$$\rightarrow 3x^2 - 15x + 10x - 50 = 0$$

$$\rightarrow 3x(x-5) + 10(x-5) = 0$$

$$\rightarrow (x-5)(3x-10) = 0$$

$$\rightarrow x = 5 \text{ or } \frac{-10}{3}$$

But the number is natural. So, $x \neq \frac{-10}{3}$

Hence, the required number = 5.

S6. Ans.(a)

Sol.

Let,

No. of rice bowl = x

no. of dal bowl = y

no. of paneer bowl = z

Then, $x + y + z = 65$ (1)

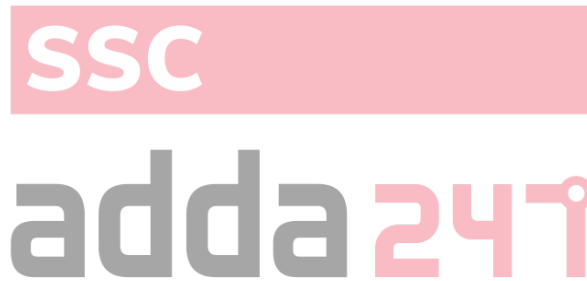
Also given that, $2x = 3y = 4z$

Substituting value of y & z in terms of x i.e. $y = \frac{2x}{3}$ and $z = \frac{x}{2}$ in eq (1),

We get $x = 30$.

As 1 rice bowl is shared between 2 guests,

Therefore, there are 60 guests.



S7. Ans.(c)

Sol.

Smallest number of 6 digits is 100000

On dividing 100000 by 111 we get 100 as remainder

Number to be added = $(111 - 100) = 11$

Required Number = 100011

S8. Ans.(c)

Sol.

$$\left(\frac{2+1}{2}\right) \left(\frac{3+1}{3}\right) \left(\frac{4+1}{4}\right) \dots \dots \left(\frac{120+1}{120}\right)$$

$$= \frac{3}{2} * \frac{4}{3} * \frac{5}{4} * \dots \dots \frac{121}{120}$$

$$= \frac{121}{2} = 60.5$$

S9. Ans.(b)

Sol.

Let the numbers be $3x$, $3x + 3$ and $3x + 6$

$$\rightarrow \text{ATQ, } 3x + 3x + 3 + 3x + 6 = 72$$

$$\rightarrow 9x + 9 = 72$$

$$\rightarrow 9x = 72 - 9 = 63$$

$$\rightarrow x = 7$$

So, Largest number

$$= 3x + 6$$

$$= 3 \times 7 + 6 = 27$$



S10. Ans.(d)

Sol.

Ten's digit = x

Unit's digit = $2x - 1$

\rightarrow Original number

$$= 10x + (2x - 1)$$

$$= 12x - 1$$

New number = $10(2x - 1) + x$

$$\rightarrow 20x - 10 + x$$

$$\rightarrow 21x - 10$$

$$\rightarrow (21x - 10) - (12x + 1) = 12x - 1 - 20$$

$$\rightarrow 9x - 9 = 12x - 21$$

$$\rightarrow 3x = 12 \text{ } \therefore x = 4$$

Original number = $12x - 1$

$$\rightarrow 12 \times 4 - 1 = 47$$

[You can also check through options].

S11. Ans.(b)

Sol.

Since, $(12-8) = (18-14) = (36-32) = (45-41) = 4$

We, need to find the L.C.M. of 12,18,36,45 and subtract 4 from it to get the required answer.

→ L.C.M. of 12, 18, 36 and 45 = 180

→ $180 - 4 = 176$

S12. Ans.(d)

Sol.

Let the number be N.

→ $N = 3a - 1 = 7b - 1 = 11c - 1$

Or $N+1$ is divisible by all 3, 7, and 11...

The smallest number which is divisible

by 3, 7, and 11 is LCM (3, 7, 11) = 231

So, $N+1 = 231$ or $N = 230$...

Thus, C is the correct answer...

S13. Ans.(c)

Sol. Let the number be x based on the given information, x can be represented as $253a+128$.

$X/23 = (253a+128)/23 = (11a + 5) + 13/23$

Therefore, the remainder when the number is divided by 23 is 13

Or

Just divide the given remainder with new divisor. You will get new remainder.

i.e. $\frac{128}{23}$ gives remainder 13

S14. Ans.(a)

Sol.

Let the two numbers be x and $(x + 3)$

→ ATQ, $x^2 + (x + 3)^2 = 369$

→ $2x^2 + 6x - 360 = 0$

→ $x^2 + 3x - 180 = 0$

→ $(x + 15)(x - 12) = 0$

The numbers are positive, $x = 12$, Therefore, the given numbers are 12 and 15

Therefore, sum of the numbers is $(12+15) = 27$

S15. Ans.(d)

Sol. Among the numbers from 100 to 200:

1 in hundred's place is present in 100 numbers

1 in ten's place is present in 10 numbers

1 in unit's place is present in 10 numbers...

Thus the total number of one's used = $100+10+10 = 120$.

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S16. Ans.(d)

Sol.

$$7^1 = 7; 7^2 = 49; 7^3 = 343;$$

$$7^4 = 2401; 7^5 = 16807$$

i.e. The unit's digit repeats itself after power 4.

Remainder after we divide 245 by 4 = 1

→ Unit's digit in the product of

$$\rightarrow (4387)^{245} \times (621)^{72}$$

$$\rightarrow \text{Unit's digit in the product of } (4387)^1 \times (621)^{72}$$

$$\rightarrow 7 \times 1 = 7$$

S17. Ans.(c)

Sol.

Unit digit of $(251)^{193} = 1$ (any power of 1 gives 1 at unit digit)

→ Unit digit of $(161)^{97} = 1$ (any power of 1 gives 1 at unit digit)

→ Unit digit of $(196)^{101} = 6$ (any power of 6 gives 6 at unit digit)

→ Unit digit of $(1005)^{345} = 5$ (any power of 5 gives 5 at unit digit)

→ Unit digit of $36^4 = 6$ (any power of 6 gives 6 at unit digit)

→ Unit digit of $349 = 9$

$$\text{So, required answer} = 1 + 1 - 6 + 5 - 6 + 9 = 16 - 12 = 4$$

S18. Ans.(b)

Sol.

Let the number be x .

According to the question,

$$\rightarrow \frac{3x}{4} - \frac{x}{6} = 7$$

$$\rightarrow \frac{9x - 2x}{12} = 7$$

$$\rightarrow x = 12$$

$$\text{So, } \frac{5x}{3} = \frac{5}{3} * 12 = 20$$

S19. Ans.(c)

Sol.

$$\frac{1}{20} + \frac{1}{30} + \frac{1}{42} + \dots + \frac{1}{132}$$

$$\rightarrow \frac{1}{4 \times 5} + \frac{1}{5 \times 6} + \frac{1}{6 \times 7} + \dots + \frac{1}{11 \times 12}$$

$$\rightarrow \frac{1}{4} - \frac{1}{5} + \frac{1}{5} - \frac{1}{6} + \frac{1}{6} - \frac{1}{7} + \dots + \frac{1}{11} - \frac{1}{12}$$

$$\rightarrow \frac{1}{4} - \frac{1}{12} = \frac{1}{6}$$

S20. Ans.(b)

Sol.

Let the denominator be x

So, numerator be $x - 4$

$$\text{Original fraction} = \frac{x-4}{x}$$

→ ATQ,

$$\rightarrow 8(x-4-2) = x+1$$

$$\rightarrow 8x - 48 = x + 1$$

$$\rightarrow 7x = 49$$

$$\rightarrow x = 7$$

Original fraction

$$\rightarrow \frac{7-4}{7} = \frac{3}{7}$$

S21. Ans.(a)

Sol.

First part = x and second part = $94 - x$

$$\rightarrow \frac{\frac{x}{5}}{\frac{94-x}{8}} = \frac{3}{4}$$

$$\rightarrow \frac{x}{5} * \frac{8}{94-x} = \frac{3}{4}$$

$$\rightarrow 47x = 15 * 94$$

$$\rightarrow x = 30$$

S22. Ans.(b)

Sol.

Mean proportional = \sqrt{ab}

$$\rightarrow \sqrt{(3 + \sqrt{2})(12 - \sqrt{32})}$$

$$\rightarrow \sqrt{(3 + \sqrt{2})4(3 - \sqrt{2})}$$

$$\rightarrow 2\sqrt{9 - 2}$$

$$\rightarrow 2\sqrt{7}$$



S23. Ans.(d)

Sol.

Boys: Girls = 4: 3 = 32: 24

Girls: Teachers = 8: 1 = 24: 3

→ Boys: Girls: Teachers = 32: 24: 3

→ Required ratio (Student: teacher)
= (32 + 24): 3 = 56: 3

S24. Ans.(a)

Sol.

$$\frac{(x^3 - y^3)}{(x^2 + xy + y^2)} = \frac{5}{1}$$

$$\rightarrow \frac{(x - y)(x^2 + xy + y^2)}{(x^2 + xy + y^2)} = \frac{5}{1}$$

$$\rightarrow x - y = 5 \dots(i)$$

Again,

$$\rightarrow \frac{(x^2 - y^2)}{x - y} = \frac{7}{1}$$

$$\rightarrow \frac{(x - y)(x + y)}{x - y} = 7$$

$$\rightarrow x + y = 7 \dots(ii)$$

On solving eq. (i) and (ii) we get,

X = 6, y = 1

$$\rightarrow \text{So, required ratio } \frac{2x}{3y} = \frac{2 \times 6}{3 \times 1} = \frac{4}{1}$$

S25. Ans.(d)

Sol.

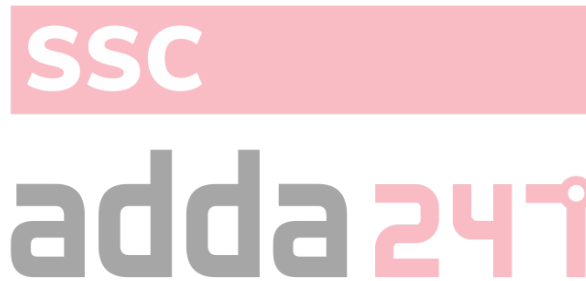
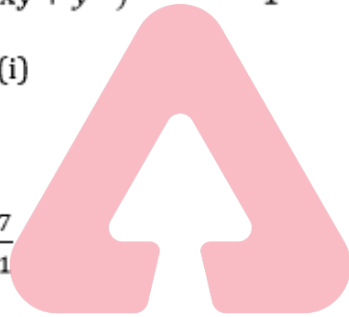
Successful students = $\frac{9}{11} \times 132 = 108$

Unsuccessful students = $\frac{2}{11} \times 132 = 24$

When 4 more students succeed,

Required ratio = (108 + 4): (24 - 4)

→ 112: 20 = 28: 5



S26. Ans.(b)

Sol. Let the number to be added be z .

$$\rightarrow \frac{x+z}{y+z} = \frac{p}{q}$$

$$\rightarrow qx + qz = py + pz$$

$$\rightarrow zp - zq = qx - py$$

$$\rightarrow z = \frac{qx - py}{p - q}$$

S27. Ans.(a)

Sol. 5 years ago, let the age of father = $2x$ years (let)

Then, Age of son = x years

$$\rightarrow \text{ATQ, } 2x + 5 + x + 5 = 100$$

$$\rightarrow 3x = 100 - 10 = 90$$

$$\rightarrow x = 30$$

Father's present age

$$= 2x + 5 = 60 + 5 = 65 \text{ years}$$

$$\text{Son's present age} = x + 5 = 30 + 5 = 35 \text{ years.}$$

After 10 years,

$$\text{Ratio} = \frac{65+10}{35+10} = \frac{75}{45} = \frac{5}{3}$$

S28. Ans.(c)

Sol.

Let the numbers be $3x$ and $4x$.

$$\text{Their HCF} = x = 15$$

$$\rightarrow \text{Sum of numbers} = 3x + 4x = 7x$$

$$= 15 \times 7 = 105$$

S29. Ans.(d)

Sol. Let the original number of students be $2x$, $3x$ and $4x$ in three class.

According to the question,

$$\rightarrow \frac{2x+12}{3x+12} = \frac{8}{11}$$

$$\rightarrow 24x + 96 = 22x + 132$$

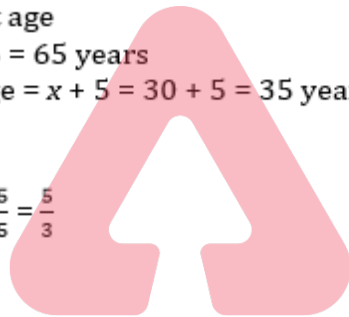
$$\rightarrow 2x = 132 - 96 = 36$$

$$\rightarrow x = 18$$

So, Original number of students

$$= 2x + 3x + 4x$$

$$= 9x = 9 \times 18 = 162$$



S30. Ans.(d)

Sol.

According to the question,

$$\begin{aligned}\text{Sum of remaining two numbers} &= 11 \times 36 - 9 \times 34 \\ &= 396 - 306 = 90\end{aligned}$$

Ratio of the remaining two numbers = 2: 3

$$\rightarrow \text{Smaller number} = \frac{2}{5} \times 90 = 36$$



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